0076436

DOE/RL-2008-04
Revision 0

Waste Treatability Studies Report for the Hanford Site, Calendar Year 2007

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

United States Department of Energy
P.O. Box 550
Richland, Washington 99352

DOE/RL-2008-04
Revision 0

Waste Treatability Studies Report for the Hanford Site, Calendar Year 2007

D. J. Rokkan
Fluor Hanford

K. R. Christensen
Washington Closure Hanford

E. L. Grohs
Pacific Northwest National Laboratory

D. C. Robertson
Washington Group International

Date Published
February 2008

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

United States Department of Energy
P.O. Box 550
Richland, Washington 99352

R. D. Arnold 02/13/2008
Release Approval Date

Approved for Public Release:
Further Dissemination Unlimited

TRADEMARK DISCLAIMER

Printed in the United States of America

Contents

This page intentionally left blank.

Summary

This report provides information required annually by the Washington Administrative Code (WAC) 173-303-071(3)(r)(ii)(F) and (3)(s)(ix) on waste treatability studies conducted for the Hanford Site by various laboratories during calendar year 2007. The studies were conducted in accordance with WAC 173-303-071, "Excluded Categories of Waste," to identify treatment processes appropriate to the waste, pre-treatment that may or may not be required, optimal treatment conditions, efficiency of the process, and so on.

Unless noted otherwise, the treatability studies were performed on waste provided by the U.S. Department of Energy, Richland Operations Office, P.O. Box 550, Richland, Washington 99352. The U.S. Environmental Protection Agency identification numbers under which these studies were conducted are WA7890008967, WAR000010355, 1890008989 (for South Carolina), and COD048742175.

In general, data and information in this report are as follows:

- amount of waste shipped for study
- name, address, and EPA and state identification number of the laboratory or testing facility conducting the treatability studies
- date the shipment was made
- by process, the types of treatability studies conducted
- names of contractors, projects, etc., for whom studies have been conducted
- total quantity of waste in storage each day, as available
- quantity and types of waste subjected to treatability studies
- data on sample residues and related waste returned to generator
- when each treatability study was conducted
- final disposition of residues and unused samples from each treatability study (e.g., whether or not unused samples and residues were returned to the generator).

Hanford Site contractors who have reported information on waste treatability studies in recent years are CH2M HILL Hanford Group, Inc., Fluor Hanford, Pacific Northwest National Laboratory (PNNL), Washington Closure Hanford (WCH), and the Hanford Tank Waste Treatment and Immobilization Plant (WTP). For calendar year 2007, only PNNL, WCH, and WTP submitted information for inclusion in this document.

This page intentionally left blank.

Small-Quantity Treatability Studies by Pacific Northwest National Laboratory during Calendar Year 2007

Laboratory location	Waste type	Amount of sample shipped,[1] kg	Date of shipment[1]	Quantity in daily storage,[2] kg (date[s])	Technology tested	Date of study	Amount tested Jan–Dec 2007, kg	Amount to be tested Jan–Dec 2008, kg	Final disposal of sample portion	Final disposal of residue
Pacific Northwest National Laboratory (PNNL) 325 Building[3]	AP-104 SY-101 AZ-101	1.12	5/1/07	0 (1/1/07–5/1/07)	electro-chemically enhanced oxidation/ decontamination	5/5/07-12/20/07	1.12	0	consumed in analysis	CWC[4]
				1.12 (5/2/07–12/20/07)						
				0 (12/21/07–12/31/07)						
	see footnote (5)	2.643	1/10/07	0 (1/1/07–1/10/07)	ion- exchange, solids washing, leaching, filtration, caustic oxidization	4/9/07-12/31/07	6.89003	12.12	consumed in analysis	CWC[4]
		4.1092	5/2/07	4.281 (1/11/07–4/9/07)						
		2.47	6/8/07	4.18064 (4/10/07–5/1/07)						
		1.337	8/22/07	10.60464 (5/2/07–5/22/07)						
		3.408	9/13/07	10.44406 (5/23/07–6/7/07)						
		0.032	10/18/07	14.98606 (6/8/07–8/19/07)						
				12.75690 (8/20/07–8/21/07)						
				16.8739 (8/22/07–9/12/07)						
				20.5169 (9/13/07–9/24/07)						

Small-Quantity Treatability Studies by Pacific Northwest National Laboratory during Calendar Year 2007 (cont.)

Laboratory location	Waste type	Amount of sample shipped,[1] kg	Date of shipment[1]	Quantity in daily storage,[2] kg (date[s])	Technology tested	Date of study	Amount tested Jan–Dec 2007, kg	Amount to be tested Jan–Dec 2008, kg	Final disposal of sample portion	Final disposal of residue
				20.3281 (9/25/07–10/10/07)						
				20.29360 (10/11/07–11/4/07)						
				16.28901 (11/5/07–11/18/07)						
				16.16691 (11/19/07–12/11/07)						
				16.11697 (12/12/07–12/31/07)						

(1) Shipped from the 222-S Laboratory, 200 Area, Hanford Site (EPA ID: WA7890008967) to the PNNL-managed 325 Building, 300 Area, Hanford Site (EPA ID: WA7890008967).

(2) Characterization research on tank waste from the Hanford Site is an on-going process that runs in parallel with treatability studies. Six shipments of characterization samples were sent in stages throughout calendar year 2007 from the 222-S Laboratory to the PNNL-managed 325 Building. As needed, subsamples were extracted from the characterization sample for treatability study while still meeting the one-year limit for treatability studies. The treatability studies themselves will not exceed one year. A water solution was added to the salt-cake and sludge samples when received from the 222-S Laboratory to make it possible to extract them in their entirety. This type of mixture is reported as "quantity in daily storage."

(3) PNNL-managed 325 Building, 300 Area, Hanford Site (EPA ID: WA7890008967).

(4) Central Waste Complex, 200 Area, Hanford Site (EPA ID: WA7890008967)

(5) Salt-cake tanks: BX-110, BX-111, BY-102, BY-104, BY-107, BY-108, BY-109, BY-110, BY-112, T-108, T-109, TX-104, TX-113, S-106, S-111, SX-102, SX-105, SX-106, SY-103, U-103, U-108; sludge tanks: B-104, B-106, B-108, B-109, BX-109, BX-112, BY-104, BY-104, BY-105, BY-106, BY-108, BY-109, BY-110, C-103, C-104, C-105, S-101, S-107, S-110, T-101, T-104, T-107, TX-101, TY-106, U-105, U-201, U-202, U-203, U-204.

Small-Quantity Treatability Studies for the Hanford Tank Waste Treatment and Immobilization Plant during Calendar Year 2007

Laboratory location	Waste type	Amount of sample shipped,[1] kg	Date of shipment[1]	Quantity in daily storage, kg	Technology tested	Date of study	Amount tested Jan–Dec 2007, kg	Amount to be tested Jan–Dec 2008, kg	Final disposal of sample portion	Final disposal of residue
Pacific Northwest National Laboratory (PNNL) 325 Building[2]	see footnote (3)	2.643	1/10/07	NA	ion-exchange, solids washing, leaching, filtration, caustic oxidization	4/9/07-12/31/07	see PNNL table	NA	see PNNL table	see PNNL table
		4.1092	5/2/07							
		2.47	6/8/07							
		1.337	8/22/07							
		3.408	9/13/07							
		0.032	10/18/07							

(1) Shipped from the 222-S Laboratory, 200 Area, Hanford Site (EPA ID: WA7890008967), to the PNNL-managed 325 Building, 300 Area, Hanford Site (EPA ID: WA7890008967), in support of WTP treatability sample studies (CCN 168287).

(2) PNNL-managed 325 Building, 300 Area, Hanford Site (EPA ID: WA7890008967)

(3) Salt-cake tanks: BX-110, BX-111, BY-102, BY-104, BY-107, BY-108, BY-109, BY-110, BY-112, T-108, T-109, TX-104, TX-113, S-106, S-111, SX-102, SX-105, SX-106, SY-103, U-103, U-108; sludge tanks: B-104, B-106, B-108, B-109, BX-109, BX-112, BY-104, BY-104, BY-105, BY-106, BY-108, BY-109, BY-110, C-103, C-104, C-105, S-101, S-107, S-110, T-101, T-104, T-107, TX-101, TY-106, U-105, U-201, U-202, U-203, U-204.

NA = not applicable

This page intentionally left blank.

Small-Quantity Treatability Study for Washington Closure Hanford during Calendar Year 2007

Laboratory location	Waste type	Amount of sample shipped, kg	Date of shipment	Technology tested	Dates of study	Amount tested Jan–Dec 2007 or in process, kg	Amount to be tested Jan–Dec 2008, kg	Final disposal of unused sample portion	Final disposal of residue
LVLI [1]	chromium-contaminated soil	75	9/17/07	stabilization	9/17/07–12/11/07	45	30	archived and will be returned to customer	ERDF

[1] LVLI = Lionville Laboratory Inc., 208 Welsh Pool Road, Lionville, PA 19341 (EPA ID: PA00023)

This page intentionally left blank.

DISTRIBUTION

	MSIN
U.S. Department of Energy–Office of River Protection	
D. W. Bowser	H6–60
L. A. Huffman	H6–60
U.S. Department of Energy–Pacific Northwest Site Office	
T. L. Aldridge	K9–42
U.S. Department of Energy–Richland Operations Office	
A. C. McKarns (5)	A5–15
DOE-RL Public Reading Room	H2–53
CH2M HILL Hanford Group, Inc.	
L. E. Borneman	T6–03
R. L. Catlow	T6–50
Fluor Hanford, Inc.	
B. J. Dixon	R3–32
J. L. Nuzum	H8–12
K. A. Peterson	H8–13
D. J. Rokkan (10)	H8–13
J. O. Skolrud	H8–13
W. E. Toebe	H8–12
G. J. Warwick	S3–30
Lockheed Martin Services, Inc.	
Central Files	B1–07
DPC	H6–08
EDMC (2)	H6–08
Pacific Northwest National Laboratory	
E. L. Grohs	K3–75
H. T. Tilden II	K3–75
PNNL Reference Library	K3–75
Washington Closure Hanford	
K. R. Christensen	L1–01
W. F. Johnson	H4–22
J. E. Rugg	L1–09
Washington Group International	
L. Bostic	MS7–A
B. L. Curn	MS7–A
D. C. Robertson	MS7–A

This page intentionally left blank.